

Harvest of Adult Birds

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Harvest of Adult Gulls

The intent is to collect a sample of gulls from each colony to establish their diet and collect samples of liver, blood, and food in their crops. Because food samples are desired, gulls will be shot with a 12-gauge shotgun as they are returning to the colony from foraging. These birds can often be identified by their straight-line, rapid flight directly towards the colony. Gulls often leave foraging sites in small groups and travel back together. Hence, we will randomly select one gull in each group and kill it. We will then wait at least 5 minutes before selecting another returning gull to collect. Gulls will be shot far enough away from the colony (0.5–1.0 km) so as not to attract gulls from the colony because then it will be hard to distinguish between them and returning foragers. Birds returning to the colony after foraging use flight lines where updrafts occur. Gulls will be shot as they travel along these flight lines so that we will be blind to their foraging locations and therefore cannot bias the results. When there are multiple flight lines coming into a single colony, we will collect 4 gulls from 3 flight lines located on different sides of the colony. We will collect 12 gulls from each colony in case we are unable to draw blood from some of them or in case a couple of them contain no food.

Harvest of Adult Shorebirds

Dietary information will be obtained by direct examination of gut contents. Five adults of each species will be collected at each site at the beginning of the nesting season (USFWS Permit #MB043593-0; UT Division of Wildlife Resources COR# 1COLL7037). Collections will be made as early in the season as possible to minimize disturbance of incubating birds. American avocet and black-necked stilt will be collected after individuals have been observed feeding for >15min. This will ensure that food items are present within the esophagus. Material collected from the ventriculus is less reliable as an indicator of diet since easily digested items are quickly passed to the intestines whereas hard material can be retained for weeks.

Collection of Samples

Blood

As soon as the adult bird is collected, blood will be collected from the heart or thoracic cavity using a sterile, non-heparinized syringe. We will attempt to collect 1–2 cc of blood. Once the blood is collected, the syringe will be closed with its cap. To reduce the possibility of contamination, the blood will be stored in the syringe and the syringe will be placed in a freezer or will be transferred to sterile, Nalgene, cryogenic vials and then frozen for analysis.

Food

California Gulls

Either in the field (preferably) or back in the lab, all food in the bird's esophagus from its gizzard to its mouth will be collected and weighed. The major types of food items in the sample will be identified at this time. The sample will then be divided in half. One half will be placed in a container with 95% alcohol to preserve it. This sample will be examined later using a dissecting microscope to more accurately assess the composition of the food sample. Special attention will be given to assess the proportion of the sample made up of brine shrimp, corixids, brine fly adults, brine fly larva, and food from a non-GSL source. The volume composition of samples (as percent) will also be determined. The rest of the food sample will be frozen in a Whirl-pak or new Nalgene bottle for selenium analysis.

Shorebirds

Immediately following collection, esophageal, proventricular, and ventricular contents will be removed, separated, and placed in individual containers with 80% ethanol. In addition the mouth (pharynx) will be rinsed with 80% ethanol and wash collected. These samples will be examined later using a dissecting microscope to more accurately assess the composition of the samples. Special attention will be given to assess the proportion of the samples made up of brine shrimp, corixids, brine fly adults, and brine fly larva. The volume composition of samples (as percent) will also be determined.

Liver

At least 2 grams of the liver will be removed, weighed, and frozen in a Whirl-pak or new Nalgene bottle.

Sample Labels

All samples (food, blood, and liver) will be labeled on the outside with the bird ID number. No internal labels will be used to guard against contamination. For each bird, its blood, liver, and food samples will be placed together in an envelope that also contains the bird's ID number, date, and place collected. Hence, each sample will be doubly labeled. Samples from all birds collected at a single colony will be stored together.

Bird Carcass

Each bird will be placed in a plastic freezer storage bag and frozen. Before doing so, it will be weighed, sexed, and aged (adult or sub-adult). Females will be checked to see if they are actively producing eggs. Physical measurements will also be taken (body length, wing length, head length and width, and bill length and width).